ABSTRACT

The present invention involves demodulation of radio signals modulated with M-ary modulation in the presence of intersymbol interference distortion. The invention presents a method for reducing the number of multiplications needed to implement a

5   maximum-likelihood-sequence-estimation (MLSE) equalizer for signals modulated with M-ary modulation. In exemplary embodiments of the present invention, the number of multiplications is reduced by pre-computing certain values needed for the determination of the branch metric and storing these pre-computed values in a product table. When a branch metric computation is to be made, whether it is an Euclidean branch metric

10   computation or an Ungerboeck branch metric computation, certain multiplication operations are replaced by simple table look-up operations. As a result, the power efficiency and speed of the system are increased. Any receiver that demodulates signals that are modulated with M-ary modulation can be implemented using the present invention. The resulting demodulator will have a lower complexity than

15   existing demodulators.